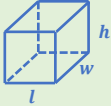
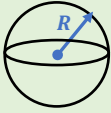
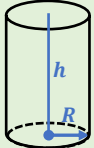


CONCEPT: SOLVING DENSITY PROBLEMS

- Density is defined as _____ divided by _____ $\Rightarrow$ $\rho = \text{---}$ [Units: ---]
(amount of stuff) (amount of space taken up)

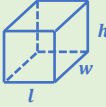
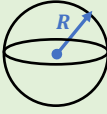
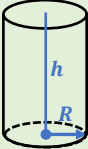
- Many problems involve relating density, mass, and volume of **geometric shapes**, and converting units.

<u>RECTANGULAR PRISM</u>	<u>SPHERE</u>	<u>CYLINDER</u>
		
$V = l \times w \times h$	$V = \frac{4}{3}\pi R^3$	$V = \pi R^2 h$

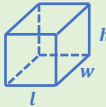
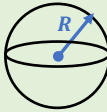
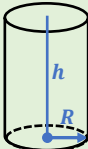
EXAMPLE: The average density of Earth is 5500 kg/m^3 . If we assume it is approximately a sphere with a radius of 3960mi, what is the mass of Earth? (1 mi $\approx$ 1609 m)

PRACTICE: A wooden cylinder has a radius of 3.5 cm and a height of 6 cm. If the mass is 161 g, what is the density of the wooden cylinder?

- A) 222 kg/m³
- B) 3.767×10^3 kg/m³
- C) 697 kg/m³
- D) 2440 kg/m³

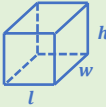
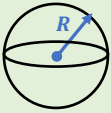
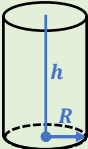
<u>RECTANGULAR PRISM</u>	<u>SPHERE</u>	<u>CYLINDER</u>
		
$V = l \times w \times h$	$V = \frac{4}{3}\pi R^3$	$V = \pi R^2 h$

EXAMPLE: An iron cube has a mass of 0.515 kg. The density of iron is 7.87×10^3 kg/m³. What is the length of the sides of the cube?

<u>RECTANGULAR PRISM</u>	<u>SPHERE</u>	<u>CYLINDER</u>
		
$V = l \times w \times h$	$V = \frac{4}{3}\pi R^3$	$V = \pi R^2 h$

PRACTICE: Copper has a density of 8.96 g/cm^3 . If a single copper atom has a mass of $1.055 \times 10^{-25} \text{ kg}$, what is the volume of a copper atom?

- A) $1.18 \times 10^{-26} \text{ m}^3$
- B) $9.45 \times 10^{-25} \text{ m}^3$
- C) $1.18 \times 10^{-29} \text{ m}^3$
- D) $1.18 \times 10^{-26} \text{ cm}^3$

<u>RECTANGULAR PRISM</u>	<u>SPHERE</u>	<u>CYLINDER</u>
		
$V = l \times w \times h$	$V = \frac{4}{3} \pi R^3$	$V = \pi R^2 h$